

WHAT IS CLAIMED IS:

1. A syringe for use with an injector comprising a syringe retaining mechanism including a flexible ring, the syringe comprising:
  - a body comprising a rearward end and a forward end;
  - a plunger movably disposed within the body;
  - at least one attachment member associated with the body, the at least one attachment member cooperating with the flexible ring of the syringe retaining mechanism to releasably attach the syringe to the injector; and
  - at least one release member associated with the body, the at least one release member operable to cause deformation of the flexible ring to enable release of the syringe from attachment with the injector upon rotation of the syringe about its axis relative to the injector, the at least one release member being positioned axially forward of the at least one attachment member.
2. The syringe of claim 1 wherein the at least one attachment member comprises a radially outward extending flange encompassing the entire perimeter of the syringe.
3. The syringe of claim 2 wherein the attachment flange has a sloped rearward surface to facilitate interaction with the flexible ring of the retaining mechanism.
4. The syringe of claim 1 wherein the at least one attachment member comprises a plurality of radially outward extending flanges positioned around the perimeter of the syringe.
5. The syringe of claim 1, further comprising a flange member associated with the body and adapted to contact a corresponding surface of the injector when the syringe is releasably engaged therewith, the flange member being positioned axially forward of the at least one release member.
6. The syringe of claim 5 wherein the flange member is adapted to substantially prevent fluid from entering the interior of the injector.

7. The syringe of claim 5 wherein contact of the flange member with the corresponding surface of the injector is an indication of proper axial positioning of the syringe with respect to the injector for releasable engagement of the syringe to the injector.

8. The syringe of claim 1 wherein the at least one attachment member is associated with the rear end of the body.

9. The syringe of claim 1 wherein the at least one release member includes a plurality of radially outward projecting members that deform the flexible ring upon rotation of the syringe about its axis to a disengagement position.

10. The syringe of claim 9 wherein the at least one attachment member comprises a radially outward extending flange encompassing the entire perimeter of the syringe and the projecting members extend radially outward at least the same amount as the attachment member.

11. The syringe of claim 9 wherein the projecting members directly contact the flexible ring to deform the flexible ring.

12. The syringe of claim 1 wherein the plunger releasably engages the a drive member of the injector via a flexible ring.

13. An injector for injecting fluid from a syringe mounted thereon, the injector comprising:

a housing;

a drive member at least partially disposed within the housing and operable to engage a plunger disposed within the syringe; and

a syringe retaining mechanism associated with the housing and being operable to seat the syringe upon axial rearward motion of the syringe relative to the syringe retaining mechanism regardless of the orientation of syringe about the axis of the syringe, the syringe retaining mechanism consisting essentially of a flexible ring maintained at a fixed axial position within the syringe retaining mechanism.

14. An injector system for injecting fluid comprising:  
a syringe comprising:  
a body comprising a rearward end and a forward end;  
a plunger movably disposed within the body;  
at least one attachment member associated with the body, and  
at least one release member associated with the body, the at least one release member being positioned axially forward of the attachment member; and  
an injector comprising:  
a housing;  
a drive member at least partially disposed within the housing and operable to engage the plunger disposed within the syringe; and  
a syringe retaining mechanism associated with the housing and being operable to seat the syringe upon axial rearward motion of the syringe relative to the syringe retaining mechanism regardless of the orientation of syringe about the axis of the syringe, the syringe retaining mechanism comprising a flexible ring maintained at a fixed axial position within the syringe retaining mechanism; the flexible ring being in a first shape adapted to engage the at least one attachment member of the syringe when the syringe is seated within the syringe retaining mechanism and the syringe is positioned about its axis at an engagement position, the flexible ring being in a second shape adapted to release the syringe when the syringe is seated within the syringe retaining mechanism and the syringe is positioned about its axis at a disengagement position, wherein the at least one release member causes the flexible ring to be in the second shape.

15. The injector system of claim 14 wherein the at least one release member comprises a plurality of radially outward projecting members that deform the flexible ring upon rotation of the syringe about its axis to the disengagement position.

16. The injector system of claim 15 wherein the at least one attachment member comprises a radially outward extending flange encompassing the entire perimeter of the syringe and the projecting members extend radially outward at least the same amount as the attachment member.

17. The injector system of claim 15 wherein the projecting members directly contact the flexible ring to deform the flexible ring.

18. An injector for injecting fluid from a syringe mounted thereon, the injector comprising:

a housing;

a drive member at least partially disposed within the housing, the drive member comprising a flexible ring disposed thereon operable to engage a plunger disposed within the syringe, the flexible ring being in a first state adapted to engage the plunger and form a connection therewith when the plunger is rotated about its axis to a first position, the flexible ring deforming to a second position adapted to enable release of the plunger when the plunger is rotated about its axis to a second position; and

a syringe retaining mechanism associated with the housing.

19. A syringe for use with an injector comprising a syringe retaining mechanism, the syringe comprising:

a body comprising a rearward end and a forward end;

a plunger movably disposed within the body; and

at least one attachment member associated with the body, the at least one attachment member comprising a flexible ring operable to releasably attach the syringe to the injector.

20. The syringe of claim 19 wherein rotation of the syringe about its axis when attached to the injector causes deformation of the flexible ring to enable detachment of the syringe from the injector.

21. An injector system for injecting fluid comprising:

a syringe comprising:

a body comprising a rearward end and a forward end;

a plunger movably disposed within the body; and

at least one attachment member associated with the body, the at least one attachment member comprising a flexible ring operable to releasably attach the syringe to the injector; and

an injector comprising:

a housing;

a drive member at least partially disposed within the housing and operable to engage the plunger disposed within the syringe; and

a syringe retaining mechanism associated with the housing and being operable to seat the syringe upon axially rearward motion of the syringe relative to the syringe retaining mechanism regardless of the orientation of syringe about the axis of the syringe, the syringe retaining mechanism defining an opening into which the syringe is insertable and comprising at least one abutment member to abut the flexible ring of the syringe and thereby resist forward axial movement of the syringe when the flexible ring is in a first shape, and at least one release member adapted to contact the flexible ring and force the flexible ring into a second shape to enable release of the syringe from attachment to the injector when the syringe is rotated about its axis to a disengagement position.

22. An injector system for injecting fluid comprising:

a syringe comprising:

a body comprising a rearward end and a forward end;

a plunger movably disposed within the body, the plunger comprising a flexible ring;

and

at least one attachment member associated with the body; and

an injector comprising:

a housing;

a drive member at least partially disposed within the housing and operable to engage the flexible ring of the plunger to releasably connect the plunger and the drive member; and

a syringe retaining mechanism associated with the housing to form a releasable engagement with the attachment member of the syringe.

23. A syringe comprising:

a body comprising a rearward end and a forward end; and

a plunger movably disposed within the body, the plunger comprising a flexible ring adapted to form a releasable connection with a drive member adapted to move the plunger within the syringe.